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Claim 1. (Canceled)

2. (Currently amended) ~~Apparatus according to claim 1, An~~

automatic soldering machine comprising:

a heater to provide heat to a quantity of solder wire and to parts in a soldering position for soldering;

means to move said heater and solder wire into the soldering position;

and

including an oil pouch for applying a coat of oil on the solder wire, said oil pouch comprising:

an oil filled, open pore sponge elastomer contained within a sealed plastic bag, wherein the pouch is positioned in the path of and is pierced by said solder wire to allow the solder wire to pass through the bag and sponge.

3. (Currently amended) Apparatus according to Claim 1, 2,

further comprising:

various adjustments which may be controlled by a machine operator, a production setup person, or a computer.

Claim 4. (Canceled)

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5. (Currently amended) An apparatus for soldering comprising:

a heater to provide heat to a quantity of solder wire and to parts in a soldering position for soldering;

means to move said heater and solder wire into the soldering position;

a solder wire feeder having a rigid guide rail with an axial groove for nesting and guiding solder wire, and

an oscillating bar positioned over the rail which supports a sharp point for engaging the solder wire as required for a forward feed motion.

6. (Previously presented) An apparatus for soldering comprising:

a solder wire feeder having a rigid guide rail with an axial groove for nesting and guiding solder wire; and

an oscillating bar positioned over the rail which supports a sharp point for engaging the solder wire as required for a forward feed motion;

said rigid guide rail having a front end positioned within about 16 diameters of a solder wire diameter from the solder tip, and wherein the front end of the guide rail contains a biasing device which holds the solder wire within the groove.

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Claims 7-14, (Canceled)

15. (Currently amended) ~~Apparatus according to Claim 14;~~

An apparatus for soldering comprising:

a heated solder tip wherein said solder tip is at a relatively constant temperature and has one or more holes to receive a portion of solder wire that is about 0.125 inches in diameter or less angularly positioned within the tip, and has one or more intersecting holes to allow exit of molten solder onto a part to be soldered,

a solder wire feeder acting to feed the solder wire into the tip through the angular holes, in which said solder wire feeder includes a rigid guide rail with an axial groove for nesting and guiding solder wire, and an oscillating bar positioned over the rail which supports a sharp point for engaging the solder wire as required for forward feed motion; and

wherein the one or more holes are of a properly designed shape, dimension, material, temperature, a controlled solder wire feed rate, and force to prevent molten solder and/or flux from ejecting out of an entrance of the one or more holes.

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16. (Currently amended) ~~Apparatus according to Claim 15;~~

An apparatus for soldering comprising:

a heated solder tip wherein said solder tip is at a relatively constant temperature and has one or more holes angularly positioned within the tip to receive a portion of solder wire and one or more intersecting holes to allow exit of molten solder onto a part to be soldered.

a solder wire feeder acting to feed the solder wire into the tip through the angular holes, wherein the one or more holes are of a properly designed shape, dimension, material, temperature, a controlled solder wire feed rate, and force to prevent molten solder and/or flux from ejecting out of an entrance of the one or more holes; and

including an oil pouch for applying a coat of oil on the solder wire, the pouch comprising an oil filled, open pore sponge elastomer contained within a sealed plastic bag, the bag being positioned in line with the and pierced by the solder wire to pass through the bag and sponge.

17. (Previously presented) Apparatus according to Claim 16,

including mechanisms for moving the solder wire actuated by cams.

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18. (Previously presented) Apparatus according to Claim 17, including means to periodically position the tip for a soldering operation, and means to heat the metal tip to temperature in the range of about 500 F to 700 F at a rate of 0.75 seconds or less and cooling the tip to temperatures in the range of about 700 F to 500 F at a rate of about 1.5 seconds.

19. (Currently amended) Apparatus according to Claim ~~14~~ 15, in which the angular passage in the solder tip is provided with a tube extension of a low thermal conductivity material.

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